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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/892,773 | 06/28/2001 | Shohei Moriwaki | 57454-160 | 3426 |

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| EXAMINER | |
|---|---|
| SEALEY, LANCE W | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2671 | |

DATE MAILED: 04/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/892,773 | MORIWAKI ET AL. | |
| | Examiner | Art Unit | |
| | Lance W. Sealey | 2671 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 November 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3-11 and 13-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,5,6,9-11,15,16 and 19* is/are allowed.

6)☒ Claim(s) *3,4,7,8,13,14,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Allowed and Allowable Subject Matter*

1. Claims 1, 5-6, 9-11, 15-16 and 19 are allowed. No prior art anticipates or suggests a three-dimensional graphics drawing apparatus drawing an object based on color data wherein said transmittance setting unit uses a reciprocal of the depth coordinate value of the object to calculate the transmittance of the relevant object (claims 5 and 15), or wherein said transmittance setting unit sets the depth coordinate value of the object as the transmittance of the relevant object (claims 1 and 11), or setting a prescribed value in a color register so that the object having a depth coordinate value greater than the threshold value is prevented from being displayed when the depth coordinate value of the relevant object exceeds the threshold value (claim 10). Claims 6 and 16 are allowed because they depend on claims 1 and 11, respectively, and claims 9 and 19 are allowed because they depend on claims 5 and 15, respectively.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 3-4, 7-8, 13-14 and 17-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Blank (U.S. Pat. No. 5,687,306) in view of Kajiya et al ("Kajiya," U.S. Pat. No. 5,977,977) and further in view of Hollis et al. ("Hollis," U.S. Pat. No. 6,580,430).

4. Blank, in disclosing an image editing system, with respect to claim 3, also discloses a three-dimensional graphics drawing apparatus drawing an object based on color data and coordinate data, comprising:

- a transmittance setting unit setting transmittance of the object based on a depth coordinate value included in said coordinate data (top-level gamma function **262**, FIG.3d—to be distinguished from background gamma function **266**, FIG.3d, which sets transmittance at a different depth value); and
- a drawing unit drawing the object based on the color data including the transmittance set by said transmittance setting unit and said coordinate data (existence is inherent based on "card is printed" step **288**, FIG.3d).

5. Blank does not disclose the transmittance setting unit using a monotone increasing function of the depth coordinate value of the object to calculate the transmittance of the relevant object. This element is disclosed by the combination of the Kajiya-Hollis image editor/fog effects generator.

6. Both Blank and Kajiya disclose image editing (Blank, Title; Kajiya, col.7, ll.33-40). It would have been obvious to a person skilled in the art at the time this invention was made to combine the Kajiya image processing board **174** with the Blank image editing system by adding the Kajiya image processing board **174** and video editing applications (FIG. 4A and col.13, ll.64-67) to the Blank graphics interface **132** (FIG.2). Kajiya expands the Blank video editing capabilities to add video to graphics and graphics to video (Kajiya, col.7, ll.38-43).

7. Kajiya also discloses rendering of special effects such as fog (col.11, ll.8-15). However, neither Blank nor Kajiya disclose the transmittance setting unit using a monotone increasing function of the depth coordinate value of the object to calculate the transmittance of the relevant object. This element is disclosed by the Hollis fog effects generator.

8. A monotone increasing function is defined as $f(x)$ increasing as $x$ increasing. This was illustrated in the specification (last paragraph of p.6) as the $\alpha$ value defined as a linear function of the Z-coordinate value with a positive coefficient so that a ratio of the $\alpha$ would change with respect to a Z-coordinate value. In the Hollis reference (see col.10, l.59 to col.11, l.6), the z value $(x)$ is varied with the fog density $(f(x)$; the denser the fog, the more opaque the alpha value).

9. Therefore, it would have been obvious to a person skilled in the art at the time this invention was made to combine the Hollis fog effects generator with the Blank-Kajiya image editing system/fog effects generator by incorporating the Hollis fog module **600b** (Fig.5—the Hollis fog module serves as a "transmittance setting unit") into the Blank graphics interface **132**

(FIG.2) enhanced with the Kajiya image processing board **174** and video editing applications. Hollis provides improved fog simulation (Hollis, Abstract, third sentence).

10. Regarding claims 4, 8, 14 and 18, neither Blank nor Kajiya disclose a positive coefficient. However, Hollis must disclose a positive coefficient; the z value and the fog density (see col.10, l.59 to col.11, l.6) cannot be negative or zero.

11. Therefore, it would have been obvious to a person skilled in the art at the time this invention was made to combine the Hollis fog effects generator with the Blank-Kajiya image editing system/fog effects generator by incorporating the Hollis fog module **600b** (Fig.5) into the Blank graphics interface **132** (FIG.2) enhanced with the Kajiya image processing board **174** and video editing applications. Hollis provides improved fog simulation (Hollis, Abstract, third sentence).

12. With respect to claims 7 and 17, neither Blank nor Kajiya disclose the transmittance setting unit calculating the transmittance of the object using the monotone increasing function of the depth coordinate value of the relevant object when the depth coordinate value of the relevant object is not greater than a threshold value. However, Hollis discloses the transmittance setting unit calculating the transmittance of the object using the monotone increasing function of the depth coordinate value of the relevant object (see col.10, l.59 to col.11, l.6; Hollis is concerned with the calculation of transmittance at a given depth, whether or not an object exists at that given depth) when the depth coordinate value of the relevant object is not greater than a

threshold value (the edge of the screen; col.11, ll.5-15). Furthermore, Blank sets a prescribed value as the transmittance of the object when the depth coordinate value of the relevant object exceeds the threshold value (if Z is not greater than 7, and it is semitransparent, the transmittance values from Z=8 to Z=31 are set to transparent—see col.20, ll.28-30. Consideration for "the relevant object" is made, among other places, in col.19, l.66 to col.20, l.5.).

13. Therefore, it would have been obvious to a person skilled in the art at the time this invention was made to combine the Hollis fog effects generator with the Blank-Kajiya image editing system/fog effects generator by incorporating the Hollis fog module **600b** (Fig.5) into the Blank graphics interface **132** (FIG.2) enhanced with the Kajiya image processing board **174** and video editing applications. Hollis provides improved fog simulation (Hollis, Abstract, third sentence).

14. Finally, since claim 13 discloses all the claim elements as claim 3 except that claim 13 discloses a method rather than an apparatus, and a method is inherent in an apparatus, claim 13 is rejected in a manner similar to claim 3, and the claims which depend on claim 13 are rejected in a manner similar to the corresponding claims which depend on claim 3.

15. Therefore, in view of the foregoing, claims 3-4, 7-8, 13-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable by Blank, Kajiya and Hollis.

***Response to Remarks***

16. Since the examiner has been persuaded by the applicants' assertions with respect to the claims which disclose a monotone increasing function, he has provided new art to reject the claims which disclose a monotone increasing function (Hollis).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the Office should be directed to the examiner, Lance Sealey, whose telephone number is (571) 272-7649. He can be reached from 7:00 am-3:30 pm Monday-Friday EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (571) 272-7653.

**Any response to this action should be mailed to:**

MS Issue Fee

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

**or faxed to:**

**(703) 872-9306**

Hand-delivered responses should be brought to the Customer Service Window of the Edmund Randolph Building, 401 Dulany Street, First Floor, Alexandria, VA 22314.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MARK ZIMMERMAN
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